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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/779,794	02/18/2004	Keiichiro Ashizawa	501.36862CC3	9621

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EXAMINER

QI, ZHI QIANG

ART UNIT PAPER NUMBER

2871

DATE MAILED: 06/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application N .

10/779,794

Applicant(s)

ASHIZAWA ET AL.

Examiner

Mike Qi

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/234,494.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2/18/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Specification*

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 2, 7 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 2, 7 and 12, recitation such as "... the width of pixel electrodes is wider than a width of the counter electrodes in a direction perpendicular to the extension direction of the gate signal lines" is unclear and indefinite since the 'width' which is not described in the specification and which is not explicitly shown in drawings how the one is wider than another. According to the specification and the Fig.25, applicant described the length of the pixel electrode being longer than the length of the common electrode which relates with applicant's recitation such as "in a direction perpendicular to the extension direction of the gate signal lines", so that for examination purpose, the "width" is construed the "length" of the pixel electrode being longer than the length of the common electrode.

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***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 6 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by US 5,852,485 (Shimada et al).

Claims 6 and 11, Shimada discloses (col.21, line 5 – col.24, line 26; Figs.11-14) that a liquid crystal display device comprising:

- first and second substrates (2101, 2102);
  - a liquid crystal layer (217) interposed between the first and the second substrate;
- 
- a plurality of video signal lines (source lines) (28), a plurality of gate signal lines (gate lines) (22) and a plurality of counter signal lines (common lines) (215) formed on the first substrate (glass lower plate) (21);
  - a plurality of counter electrodes (213) connected to one of the counter signal lines (215) formed on the first substrate (the lower plate) (21);
  - a plurality of pixel electrodes (211) formed on the first substrate;
  - a plurality of pixel region having at least a counter electrode (213) and at least a pixel electrode (211);

- the counter signal lines (215) are formed by patterning a metal layer, i.e., the counter signal lines (215) are made of metal;
- each of the pixel regions including a first region, a second region and a third region in this order in a direction perpendicular to an extension direction of the gate signal lines, i.e., along the vertical direction in a pixel region having such three regions, and the second region (middle one) having the one of the counter signal lines (215) thereon;

(concerning claim 6)

- a width of the pixel electrodes (211) is in the second region wider than a width of the one of the counter signal lines (215) in the second region (middle one) in the direction perpendicular to the extension direction of the gate signal lines (22) (along the vertical direction) as shown in the Fig.11;

(concerning claim 11)

- ~~the pixel electrodes (211) overlap with the one of the counter signal lines~~ (215) in plan view in the second region (middle one) and both edges of the pixel electrodes (211) extend beyond edges of the one of the counter signal lines (215) in the direction perpendicular to the extension direction of the gate signal lines (22) (along the vertical direction) as shown in the Fig.11.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,852,485 (Shimada et al) in view of US 6,335,770 (Komatsu).

Claim 1, Shimada discloses (col.21, line 5 – col.24, line 26; Figs.11-14) that a liquid crystal display device comprising:

- first and second substrates (2101, 2102);
- a liquid crystal layer (217) interposed between the first and the second substrate;
- a plurality of video signal lines (source lines) (28), a plurality of gate signal lines (gate lines) (22) and a plurality of counter signal lines (common lines) (215) formed on the first substrate (glass lower plate) (21);
- a plurality of counter electrodes (213) connected to one of the counter signal lines (215) formed on the first substrate (the lower plate) (21);
- a plurality of pixel electrodes (211) formed on the first substrate;
- a plurality of pixel region having at least a counter electrode (213) and at least a pixel electrode (211);
- the counter signal lines (215) are formed by patterning a metal layer, i.e., the counter signal lines (215) are made of metal;
- the pixel electrodes (211) have a wide portion at an overlapping region (middle one) with the one of the counter signal lines (215);

- a width of the pixel electrodes is wider than a width of the one of the counter signal lines in a direction perpendicular to an extension direction of the gate signal lines (22) (along the vertical direction) as shown in the Fig. 11.

Shimada does not explicitly disclose that a distance between farthest apart edges of the counter electrodes in the pixel region is longer than a distance between farthest apart edges of the pixel electrodes in the pixel region in a direction perpendicular to an extension direction of the video signal lines (DL) (horizontal direction).

However, Komatsu discloses (col.1, lines 21 – 63; Fig.1) that a structure of a conventional in-plane switching mode liquid crystal display device in which the distance between the farthest apart of the counter electrodes (common electrode) (9) in the pixel region is longer than a distance between the farthest apart edges of the pixel electrode (data electrode) (8) in the pixel region in a direction perpendicular to an extension direction of the video signal lines (data lines) (2) (horizontal direction) (as shown in Fig.1). Because of the common knowledge of the longer distance between the common electrodes would increase the display area and a wide electric field between the pixel electrodes and the common electrodes, so that the liquid crystal molecular in a wide electric field would cause a wide viewing angle. Therefore, a longer farthest distance between the common electrodes would increase the display area and widen a viewing angle.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to arrange the distance between the farthest apart edges of the



counter electrodes in the pixel region is longer than a distance between farthest apart edges of the pixel electrodes in the pixel region (horizontal direction) as claimed in claim 1 for increasing the display area and obtaining a wide viewing angle.

8. Claims 2-5, 7-10 and 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimada and Komatsu as applied to claims 1, 6 and 11 above, and further in view of US 5,907,379 (Kim et al).

Claims 2-4, 7-9 and 12-14, lacking limitation is such that the width of the pixel electrodes is wider than a width of the counter electrodes (or the edges of the pixel electrodes extend beyond the edges of the counter electrodes) in a direction perpendicular to the extension direction of the gate signal lines; and the pixel electrodes are formed at an upper layer with respect to a layer of the counter electrodes.

However, Kim discloses (col.3, line 52 – col.6, line 15: Figs.4-6) that an IPS LCD wherein along the vertical direction (perpendicular to the gate line extend direction), all edges of the pixel electrodes pattern (45,46, 43, 44) extend beyond edges of the counter electrodes (21,22,23) or the width of the pixel electrodes pattern (45,46, 43, 44) is wider than a width of the counter electrodes (21,22,23); and such that the longitudinal length of the display area is increased, so as to increase the display aperture ratio. Kim also discloses (Fig.5) that the pixel electrodes (45,46) are formed at an upper layer with respect to a layer of the counter electrodes (22,23), and that is a conventional of an IPS LCD for generating a lateral electric field and a wide viewing angle.

Therefore, it would have been obvious to those skilled in the art at the time the

invention was made to arrange the edges of the pixel electrodes along the vertical direction extend beyond the edges of the counter electrodes or the width of the pixel electrodes is wider than a width of the counter electrodes as claimed in claims 2-4, 7-9 and 12-14 for increasing the display aperture ratio and obtaining a wide viewing angle.

Claims 5, 10 and 15, Shimada discloses (Fig.11) that all edges of the pixel electrodes (211) (middle portion) extend beyond edges of the one of the counter signal lines (215) in the direction perpendicular to the extension direction of the gate signal lines (22) (vertical direction).

9. Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,852,485 (Shimada et al) in view of US 5,907,379 (Kim et al).

Claim 16, Shimada discloses (col.21, line 5 – col.24, line 26; Figs.11-14) that a liquid crystal display device comprising:

- first and second substrates (2101, 2102);
- a liquid crystal layer (217) interposed between the first and the second substrate;
- a plurality of video signal lines (source lines) (28), a plurality of gate signal lines (gate lines) (22) and a plurality of counter signal lines (common lines) (215) formed on the first substrate (glass lower plate) (21);
- a plurality of counter electrodes (213) connected to one of the counter signal lines (215) formed on the first substrate (the lower plate) (21);
- a plurality of pixel electrodes (211) formed on the first substrate;

- a plurality of pixel region having at least a counter electrode (213) and at least a pixel electrode (211);
- the counter signal lines (215) are formed by patterning a metal layer, i.e., the counter signal lines (215) are made of metal.

Shimada does not explicitly disclose that all edges of the pixel electrodes extend beyond edges of the counter electrodes in a direction perpendicular to an extension direction of the gate signal lines (GL) (vertical direction).

However, Kim discloses (col.3, line 52 – col.6, line 15: Figs.4-6) that an IPS LCD wherein along the vertical direction (perpendicular to the gate line extend direction), all edges of the pixel electrodes pattern (45,46, 43, 44) extend beyond edges of the counter electrodes (21,22,23); and such that the longitudinal length of the display area is increased, so as to increase the display aperture ratio.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to arrange the edges of the pixel electrodes along the vertical direction extend beyond the edges of the counter electrodes as claimed in claim 16 for increasing the display aperture ratio.

Claim 17, Shimada discloses (Fig.11) that all edges of the pixel electrodes (211) (middle portion) extend beyond edges of the one of the counter signal lines (215) in the direction perpendicular to the extension direction of the gate signal lines (22) (vertical direction).

**Conclusion**

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

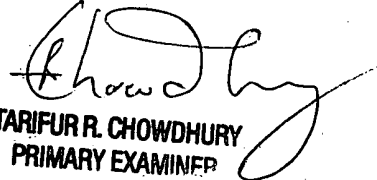
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (571) 272-2299.

The examiner can normally be reached on M-T 8:00 am-5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mike Qi  
May 17, 2004

  
TARIFUR R. CHOWDHURY  
PRIMARY EXAMINER